

FIG. 1A

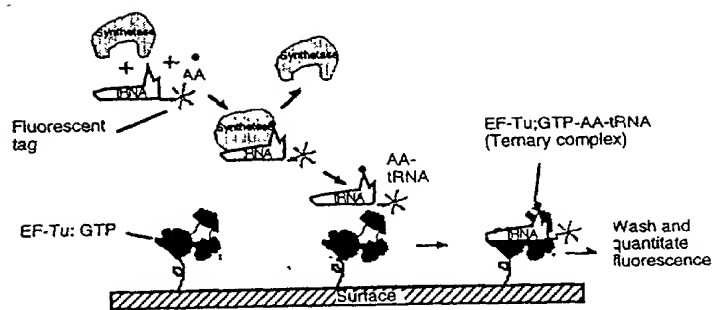


FIG. 1B

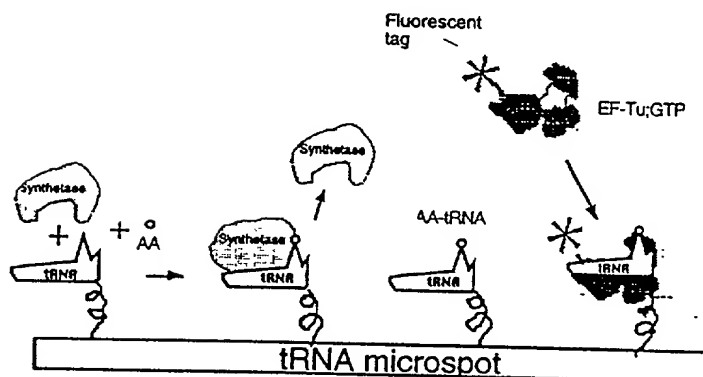


FIG. 2A

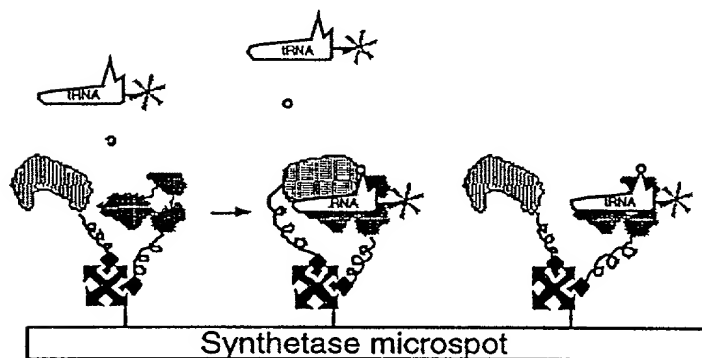
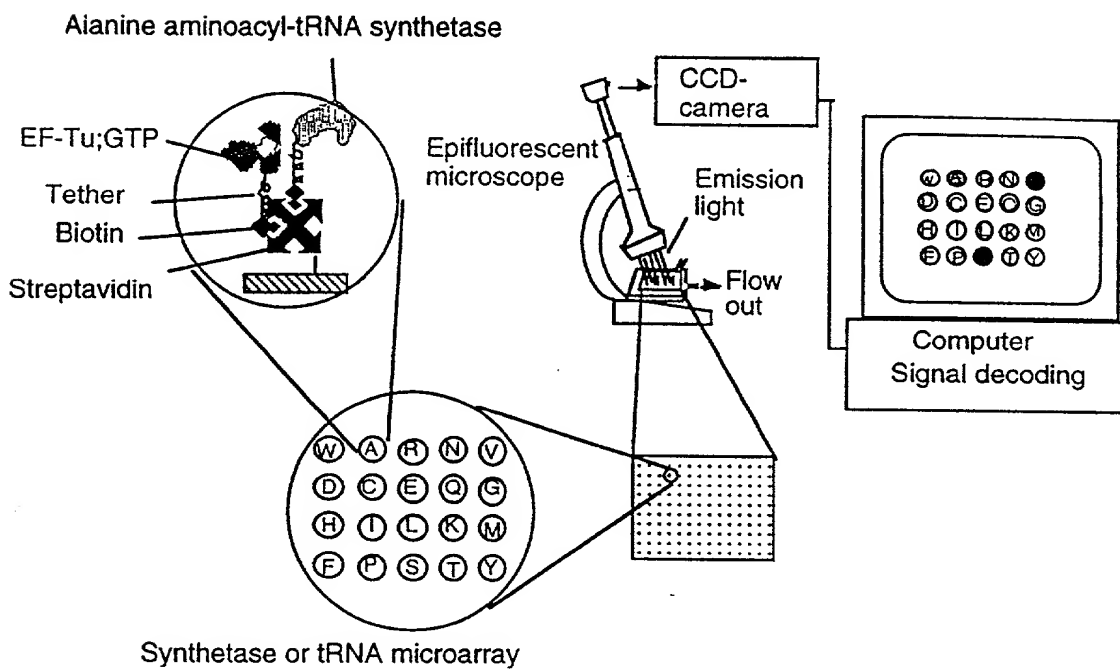


FIG. 2B



**FIG. 3**

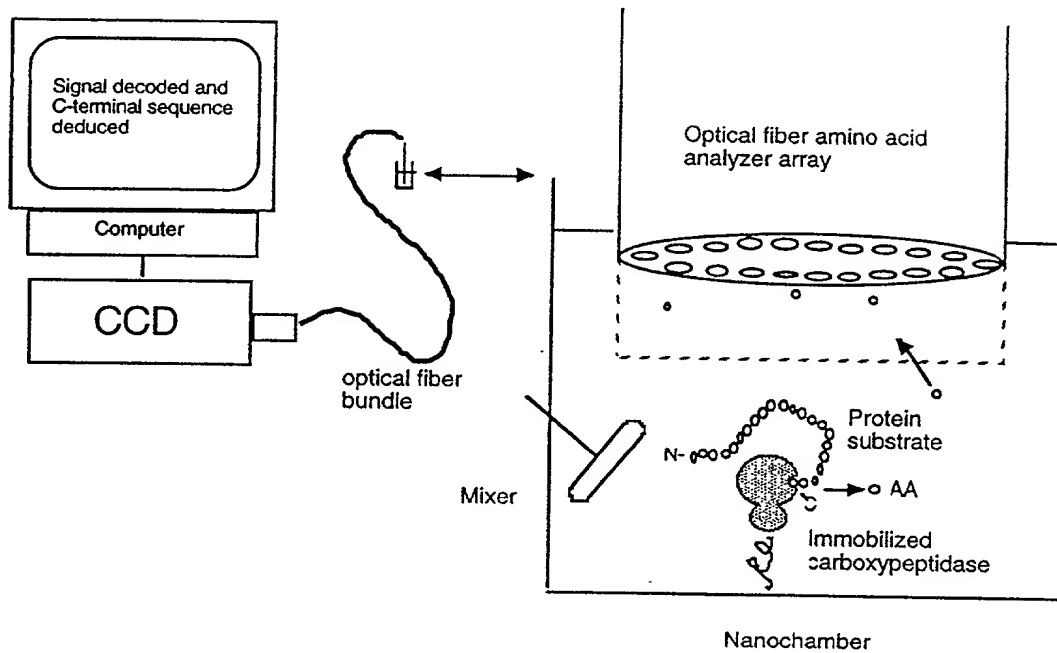
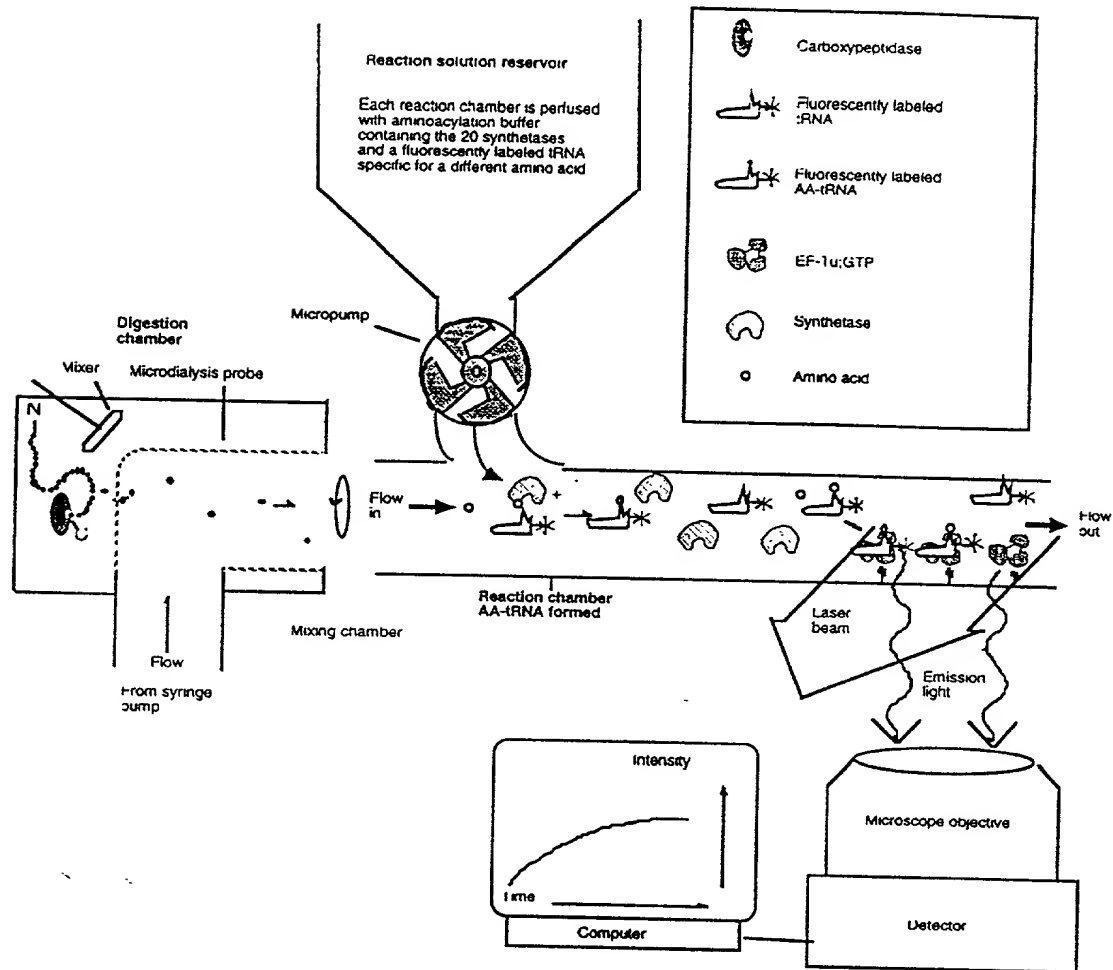


FIG. 4



**FIG. 5A**

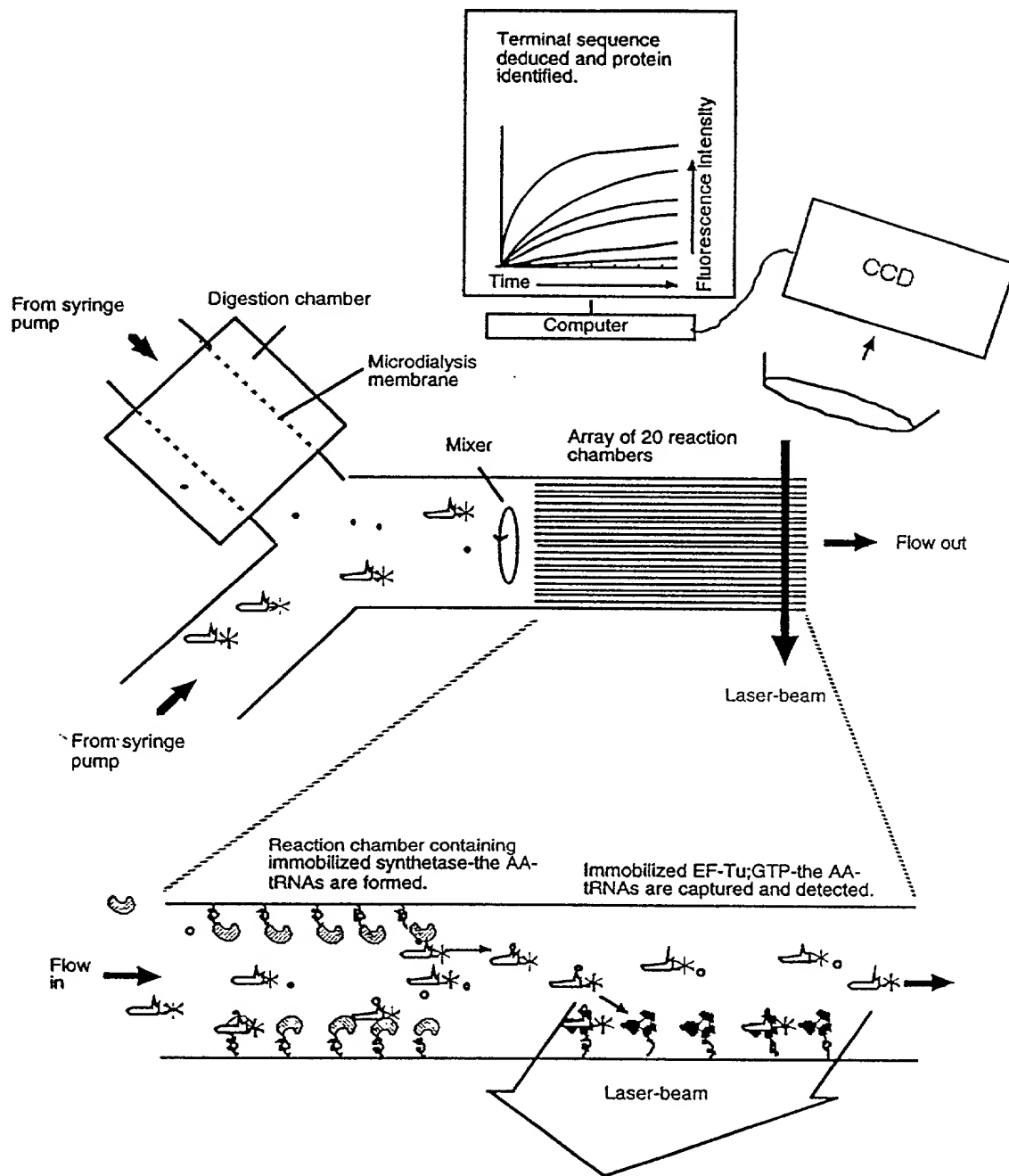


FIG. 5B

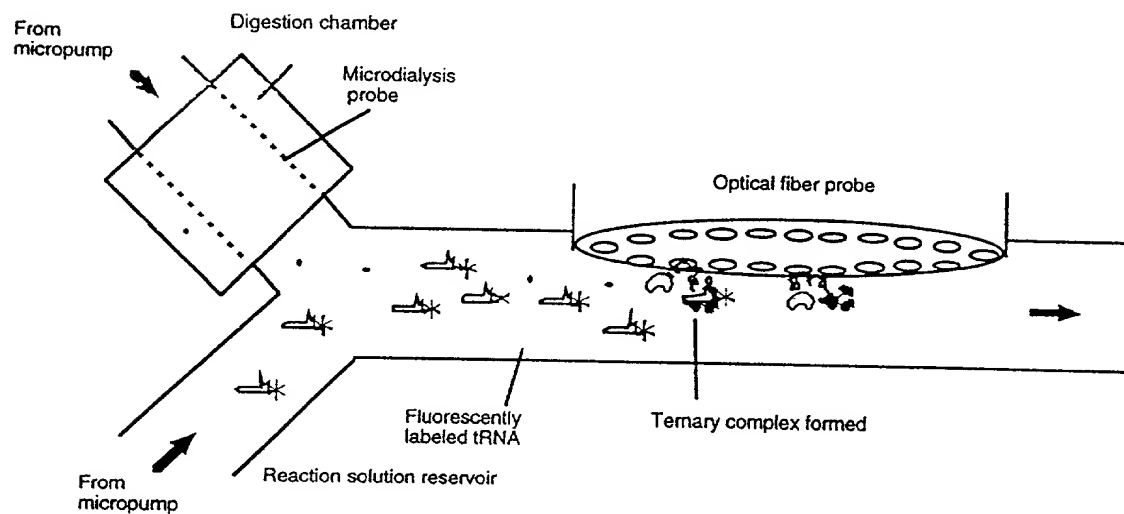
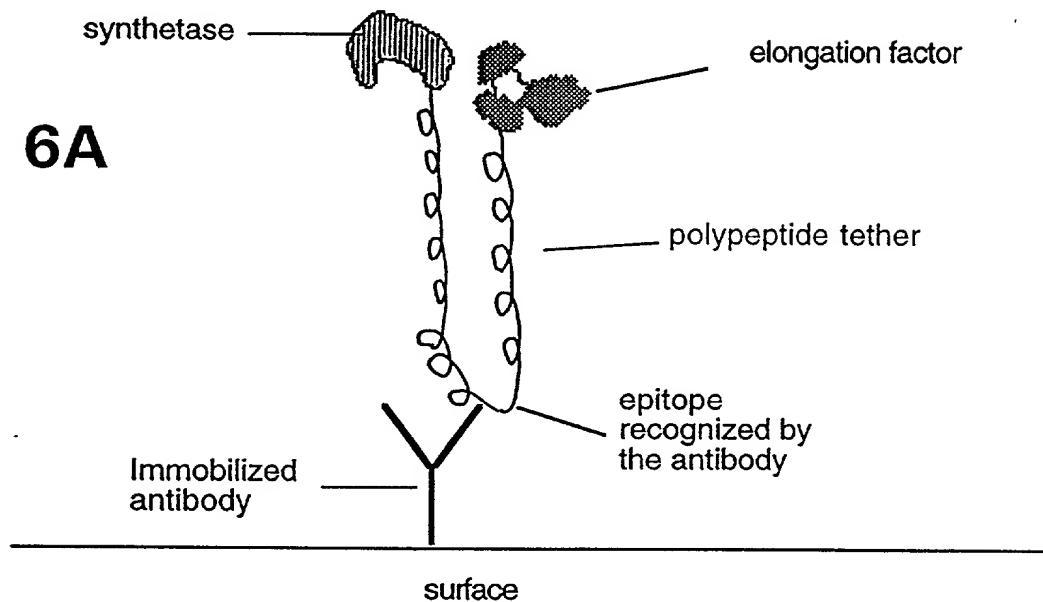
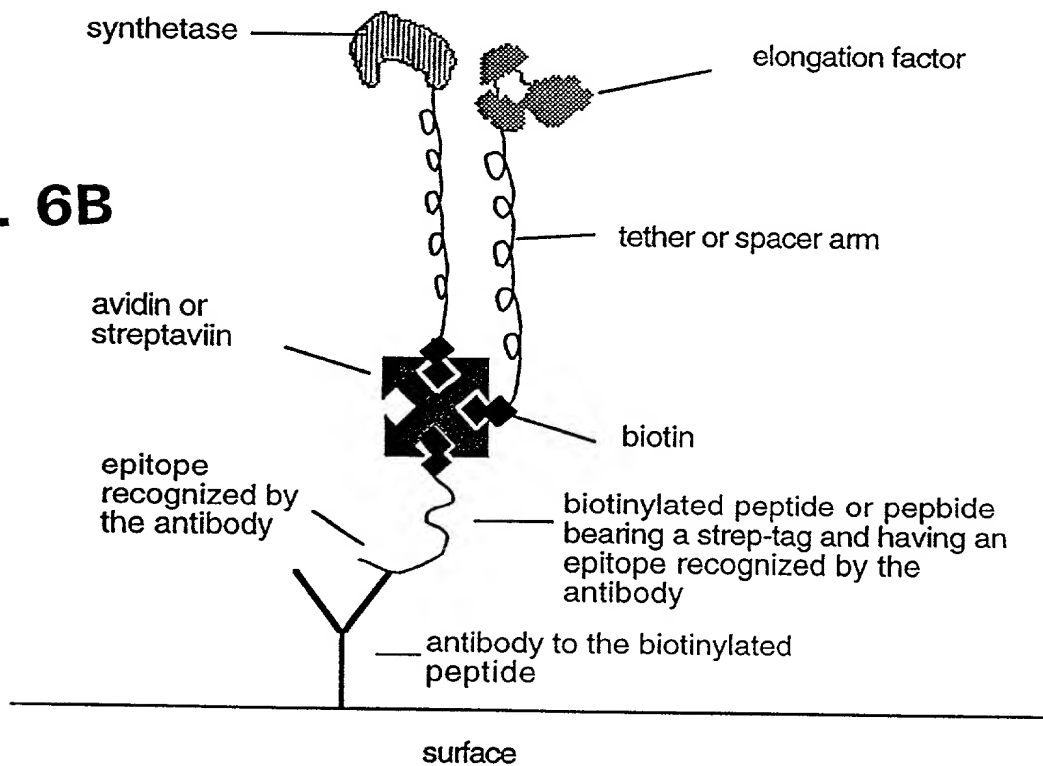


FIG. 5C

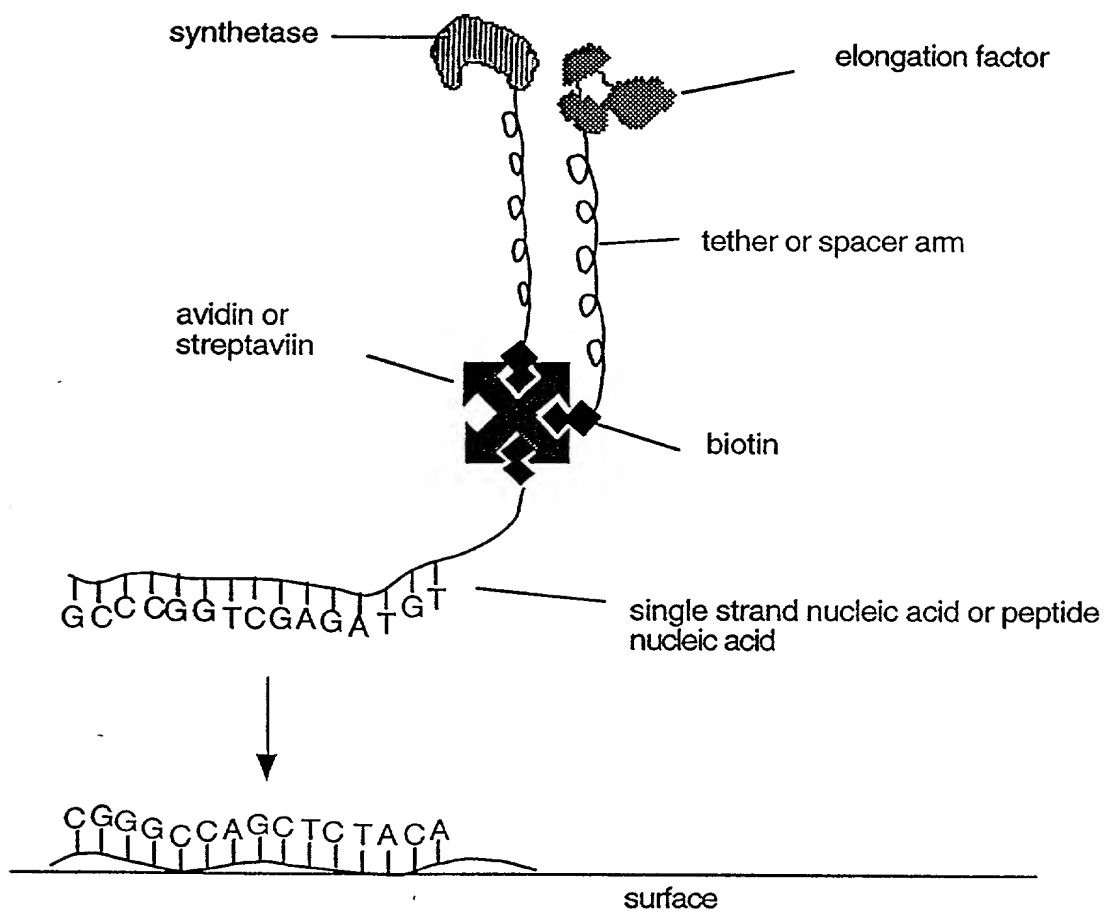
**FIG. 6A**



**FIG. 6B**







**FIG. 6C**

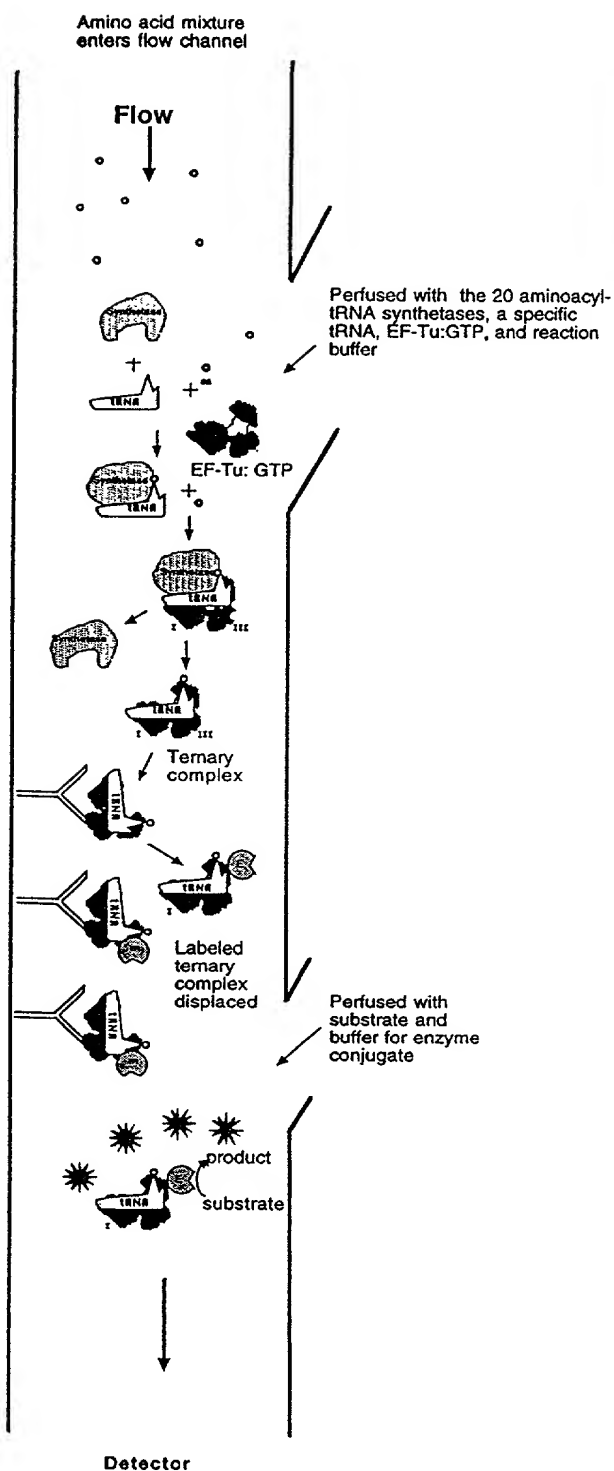


FIG. 7A

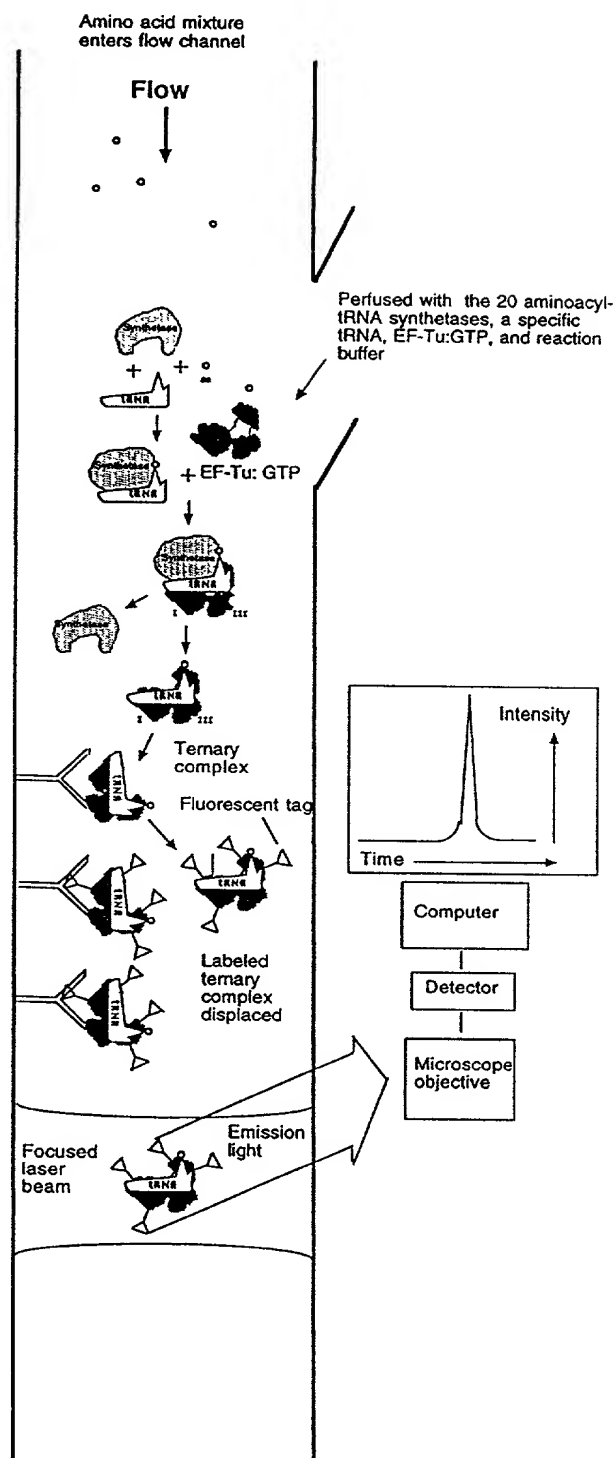


FIG. 7B

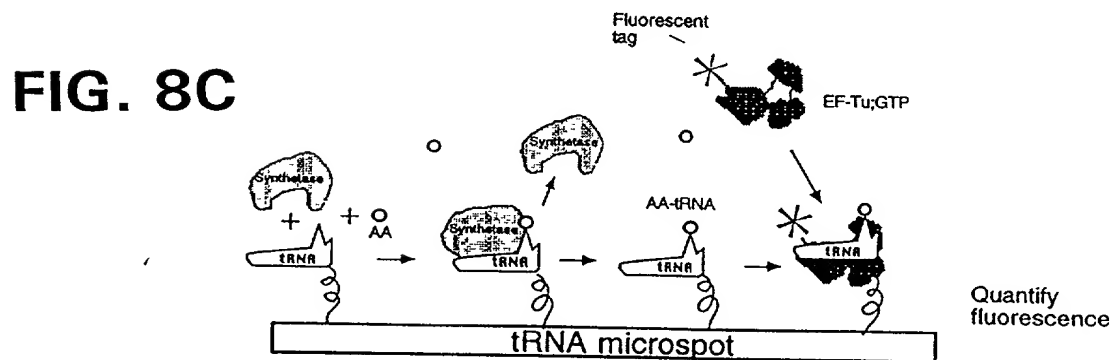
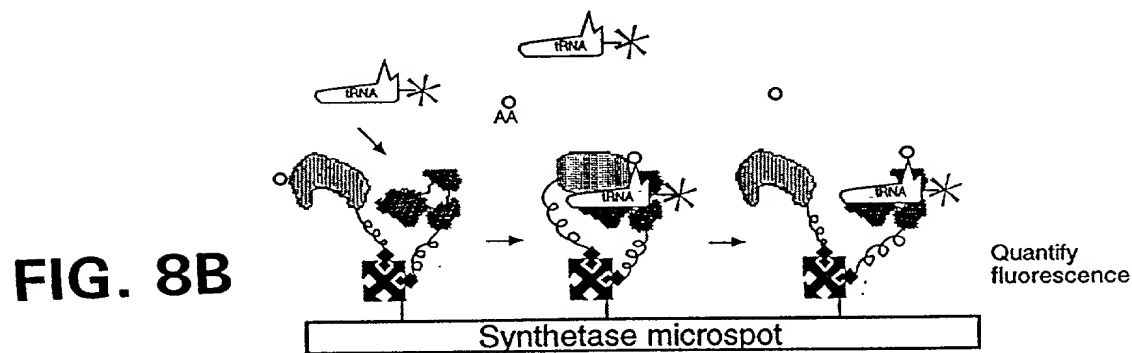
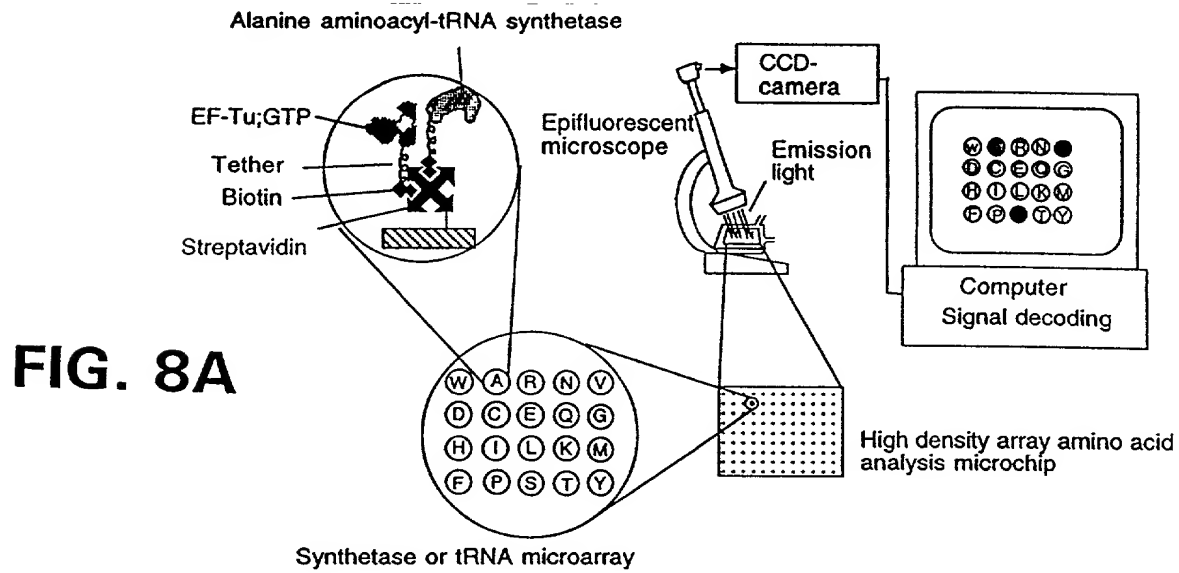
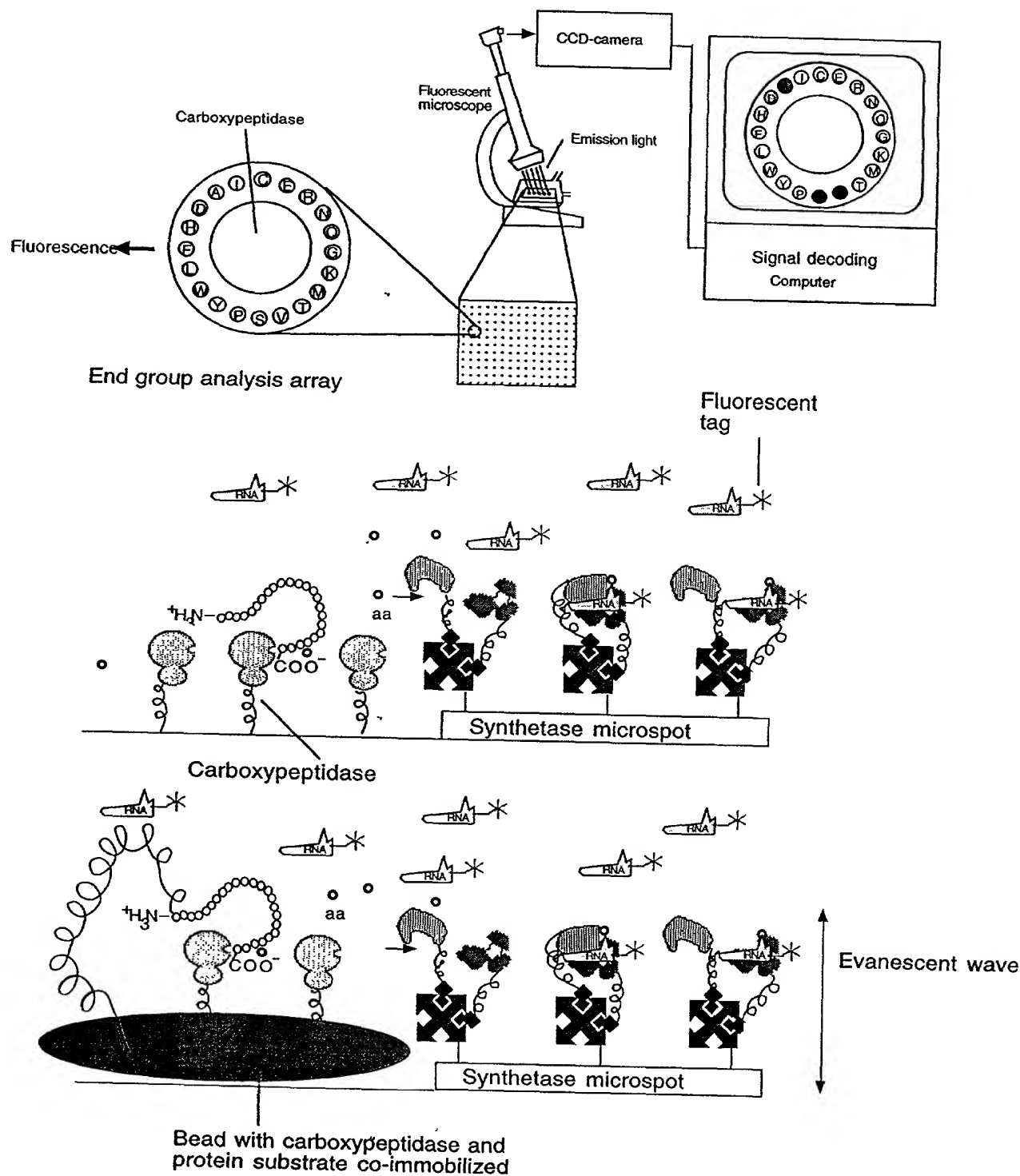
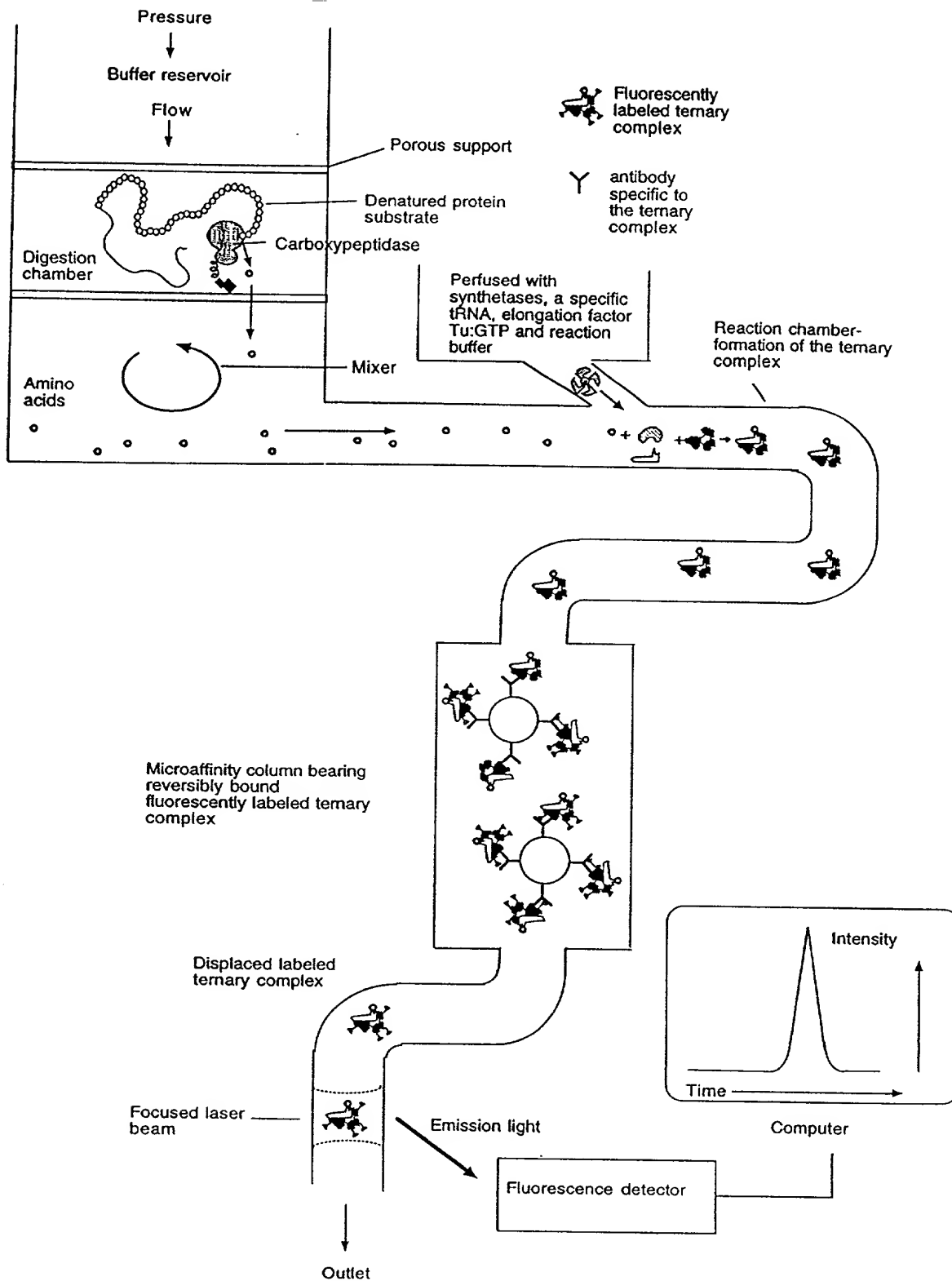


Fig.8D





**FIG. 9**

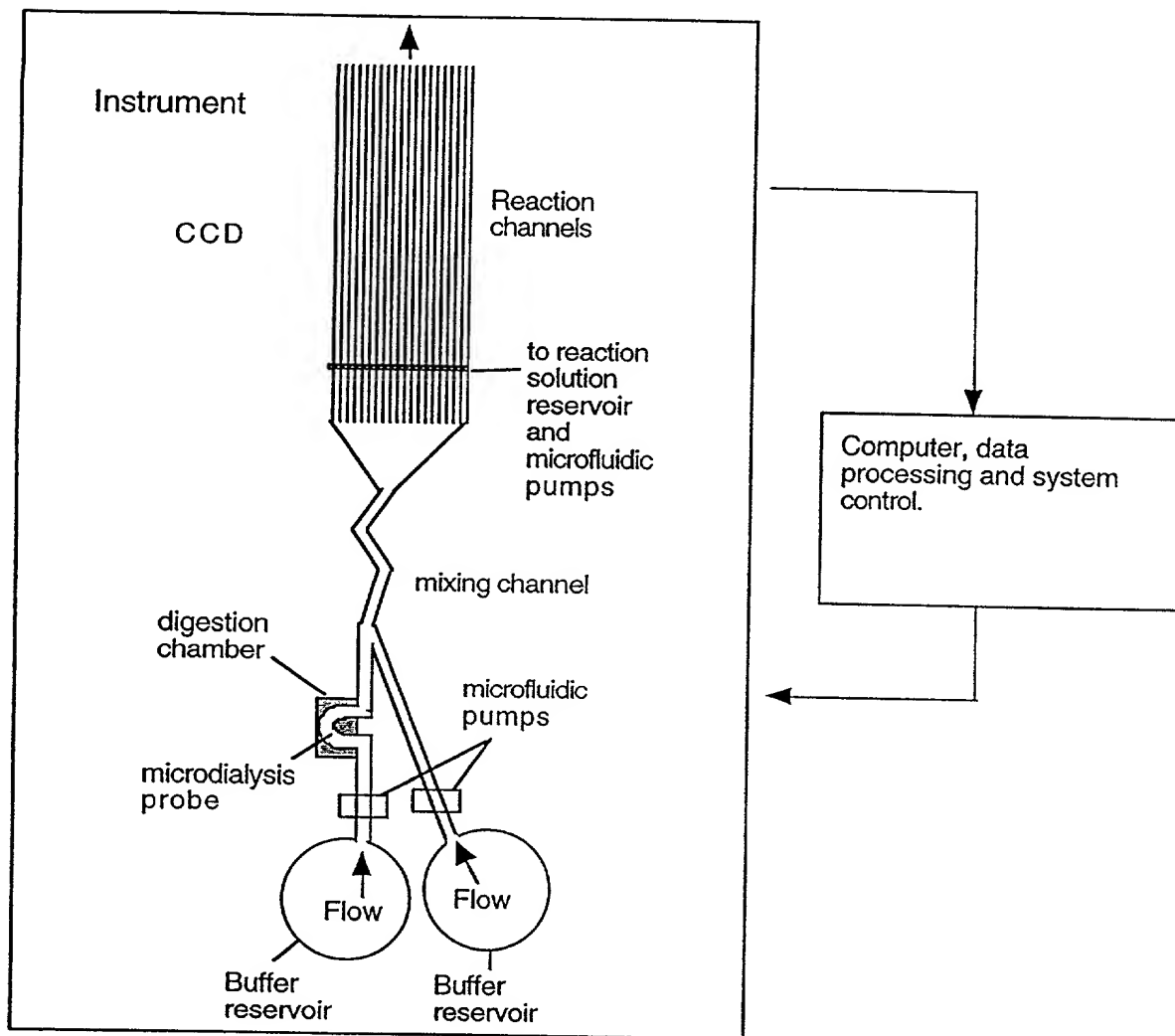
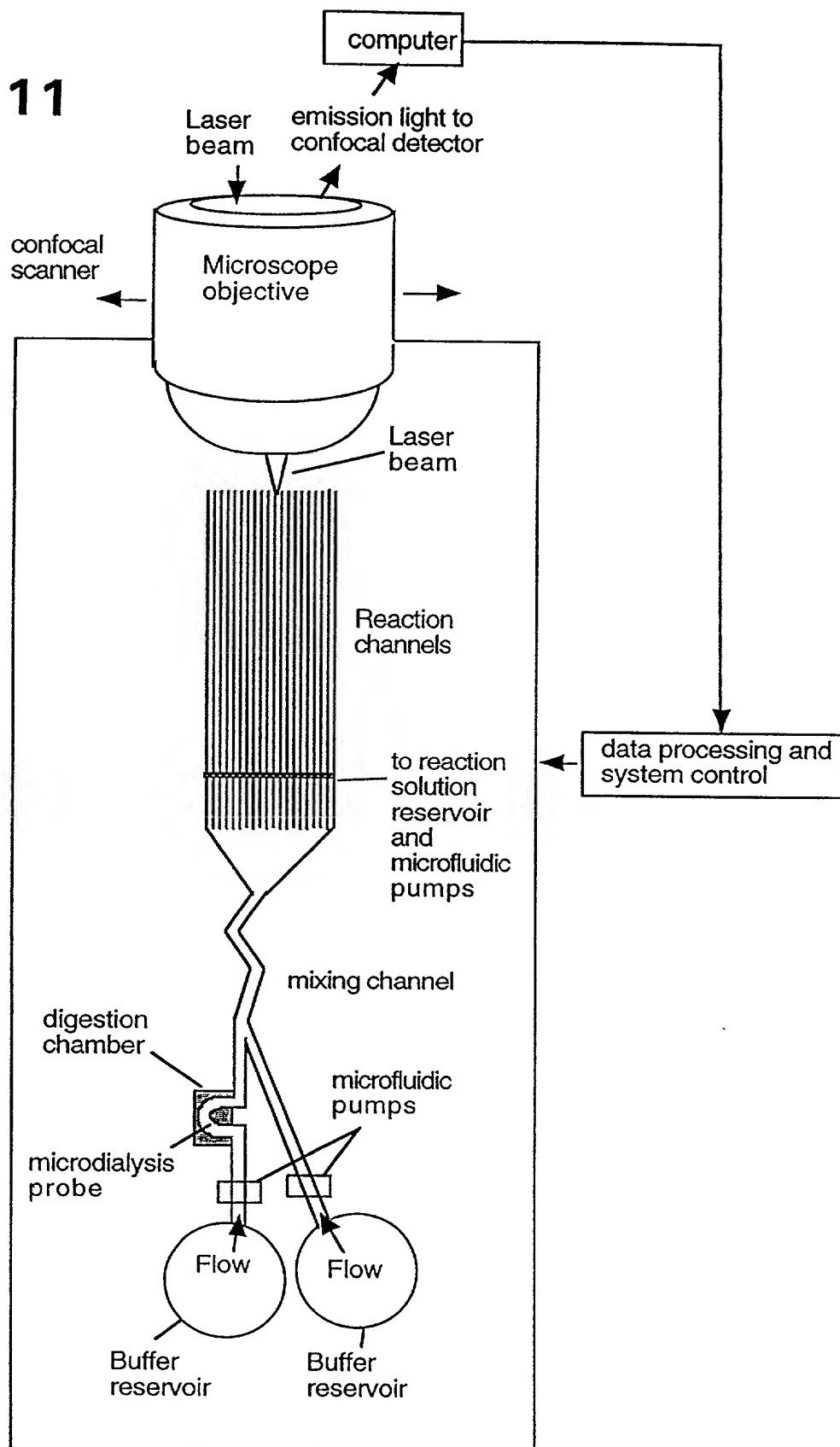


FIG. 10

FIG. 11



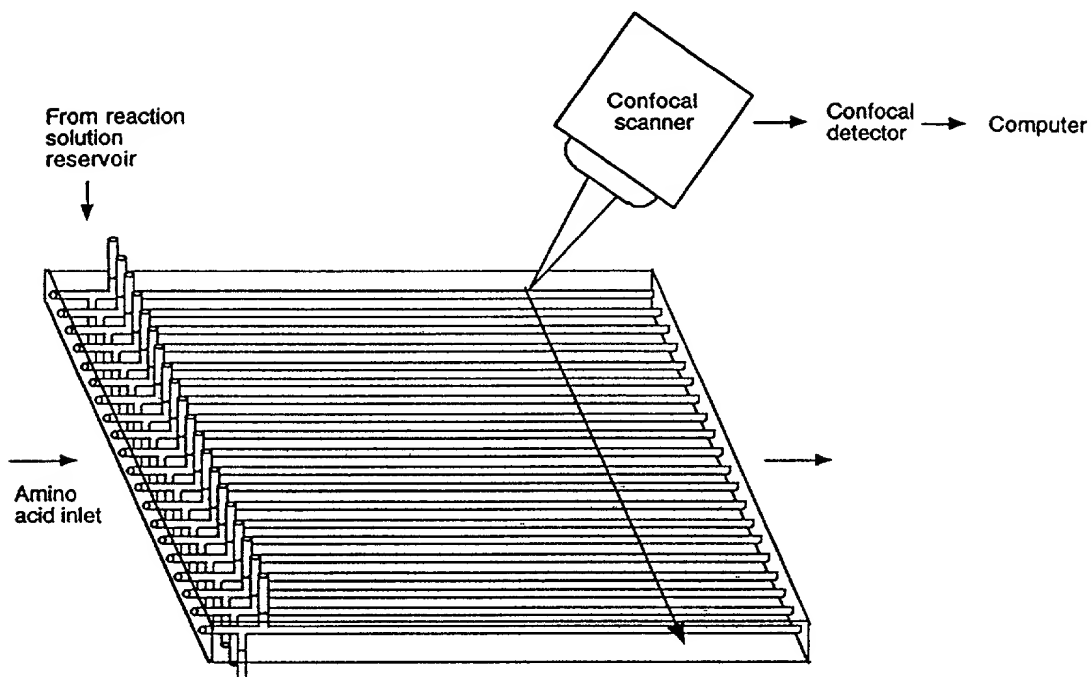


FIG. 12A

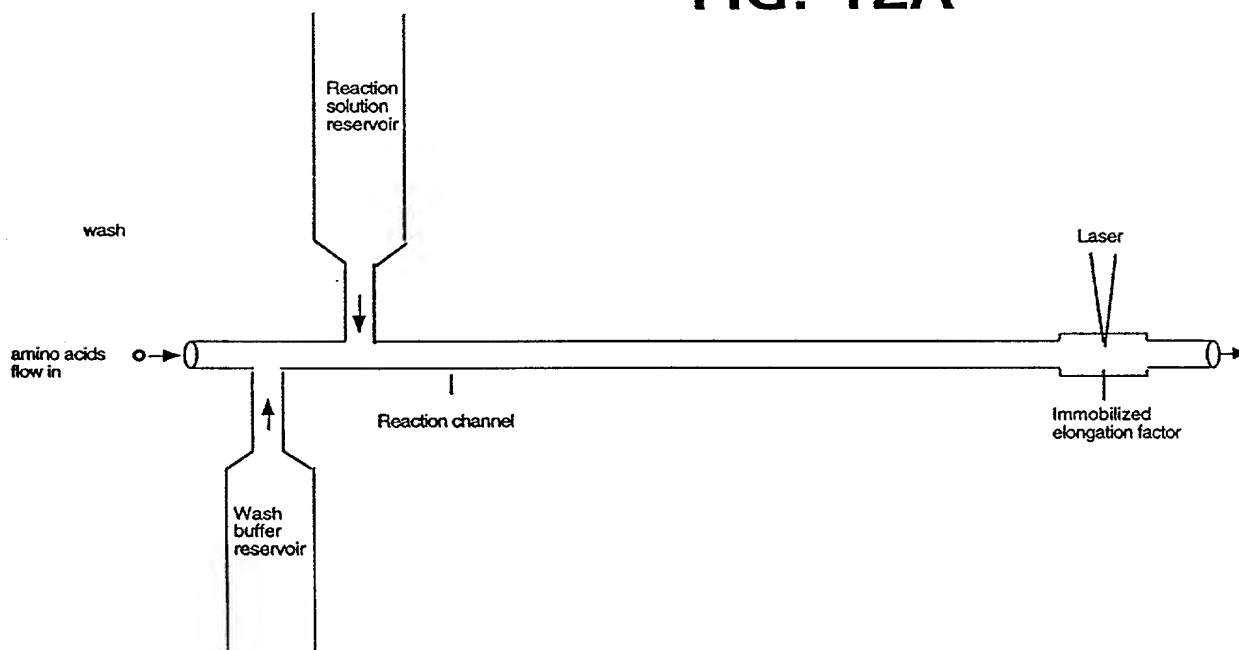


FIG. 12B



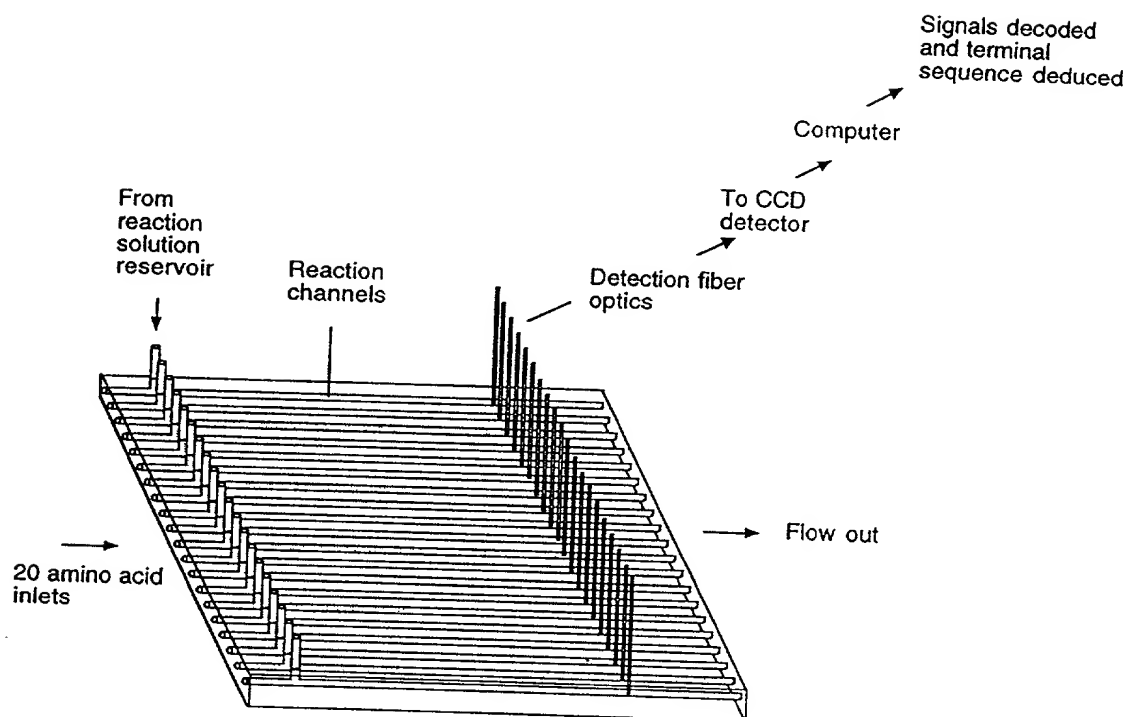
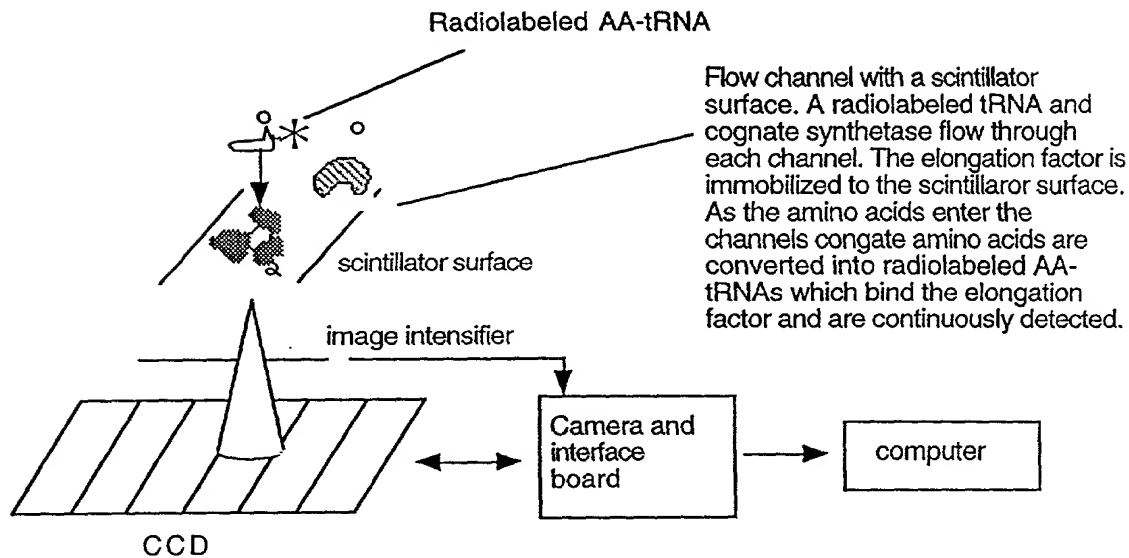
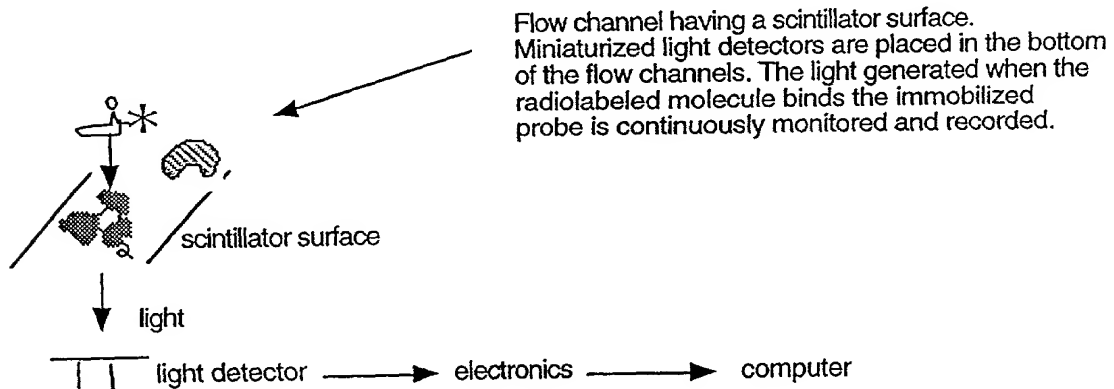


FIG. 12C



**FIG. 13A**



**FIG. 13B**

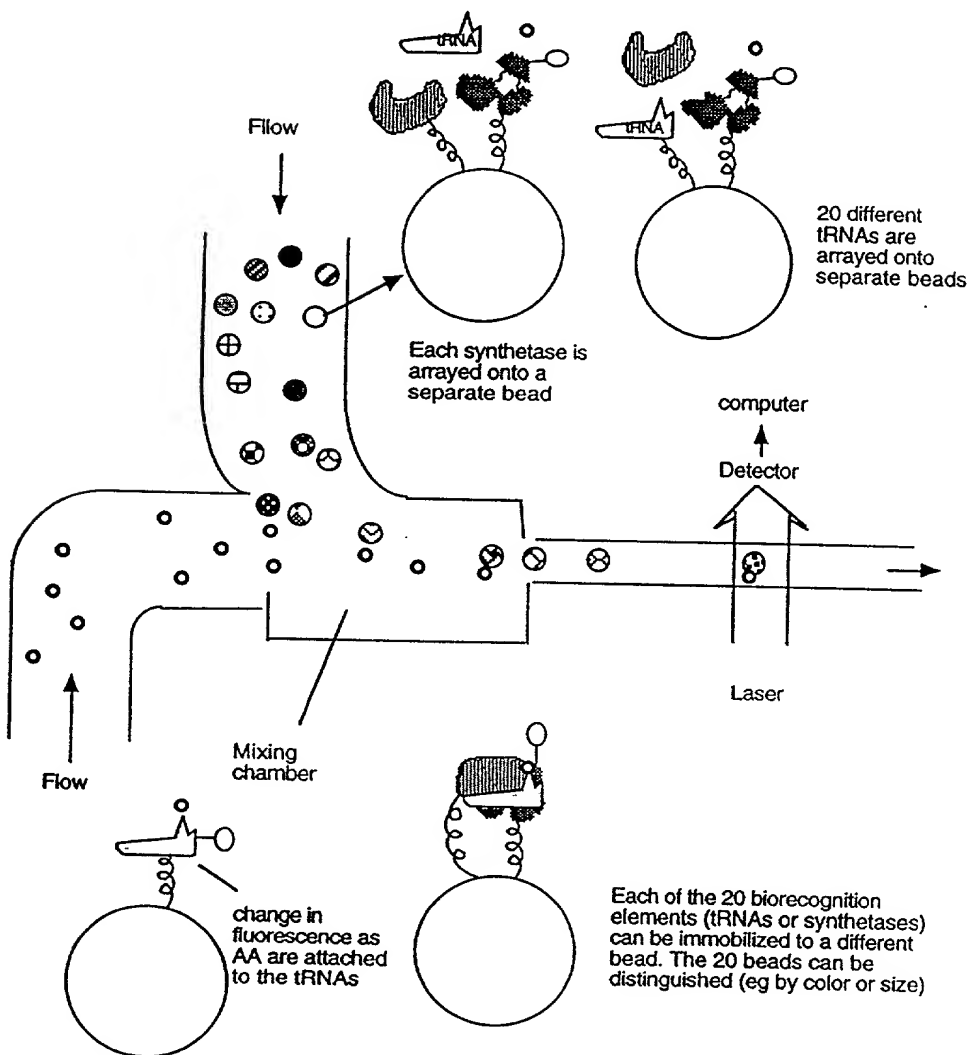


FIG. 14

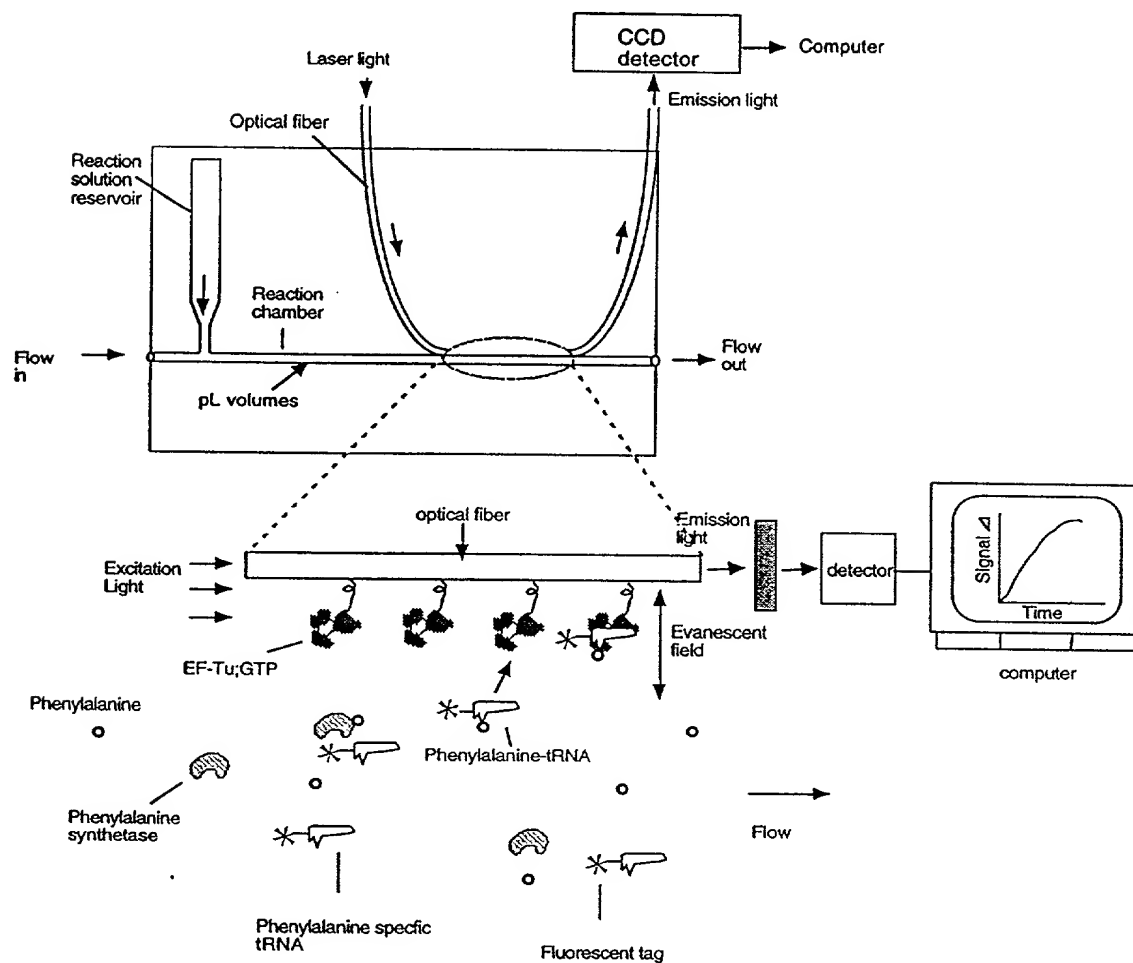
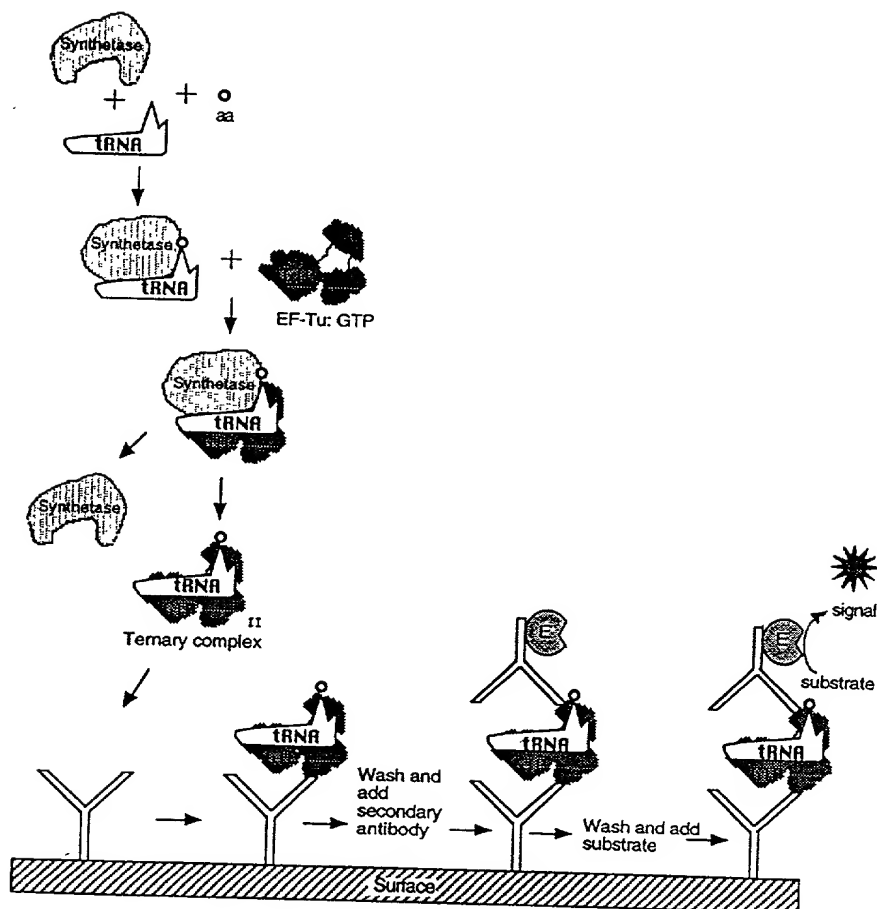
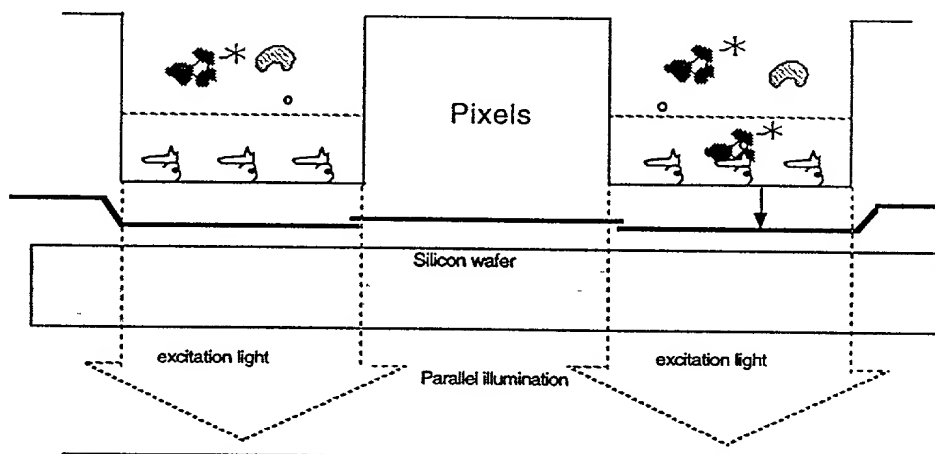


FIG. 15

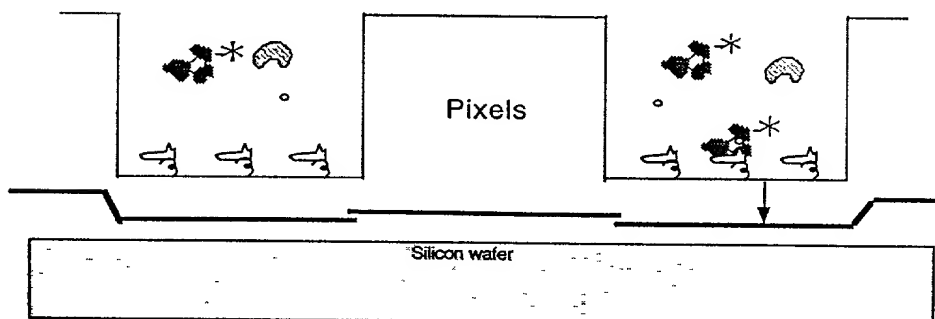


**FIG. 16**

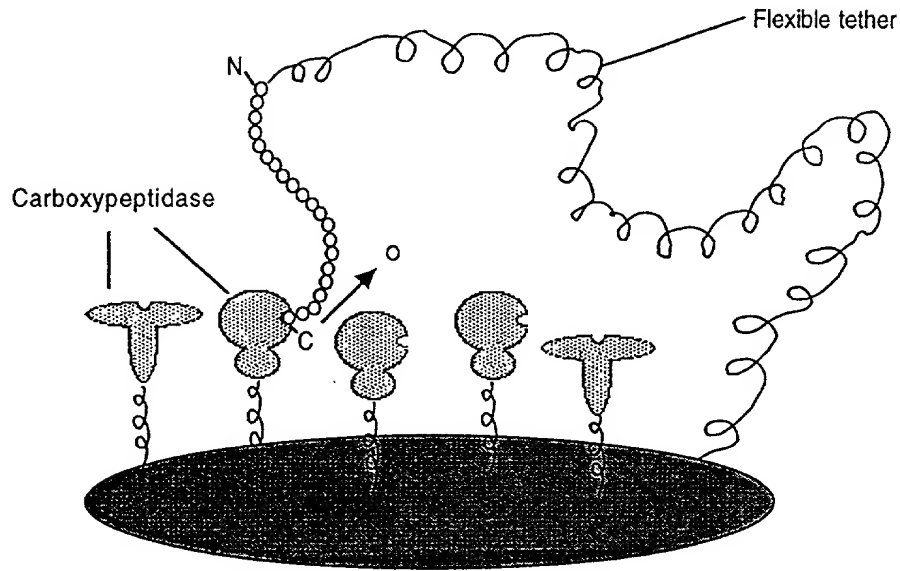
Proximal CCD



Radioisotope or chemiluminescent labeling



**FIG. 17**



**FIG. 18**

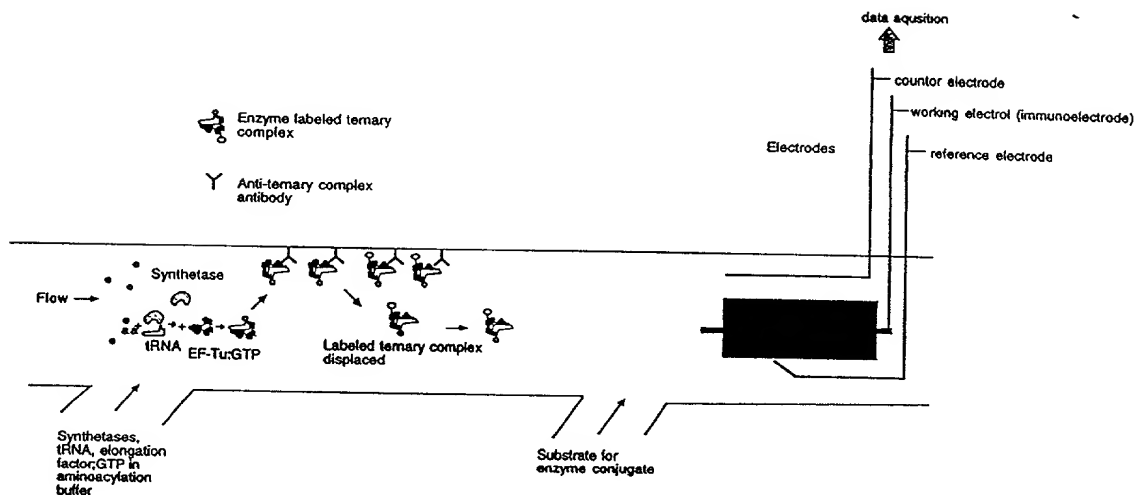


FIG. 19A

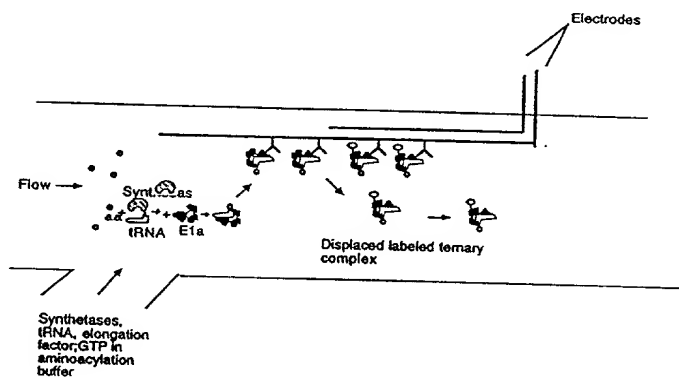
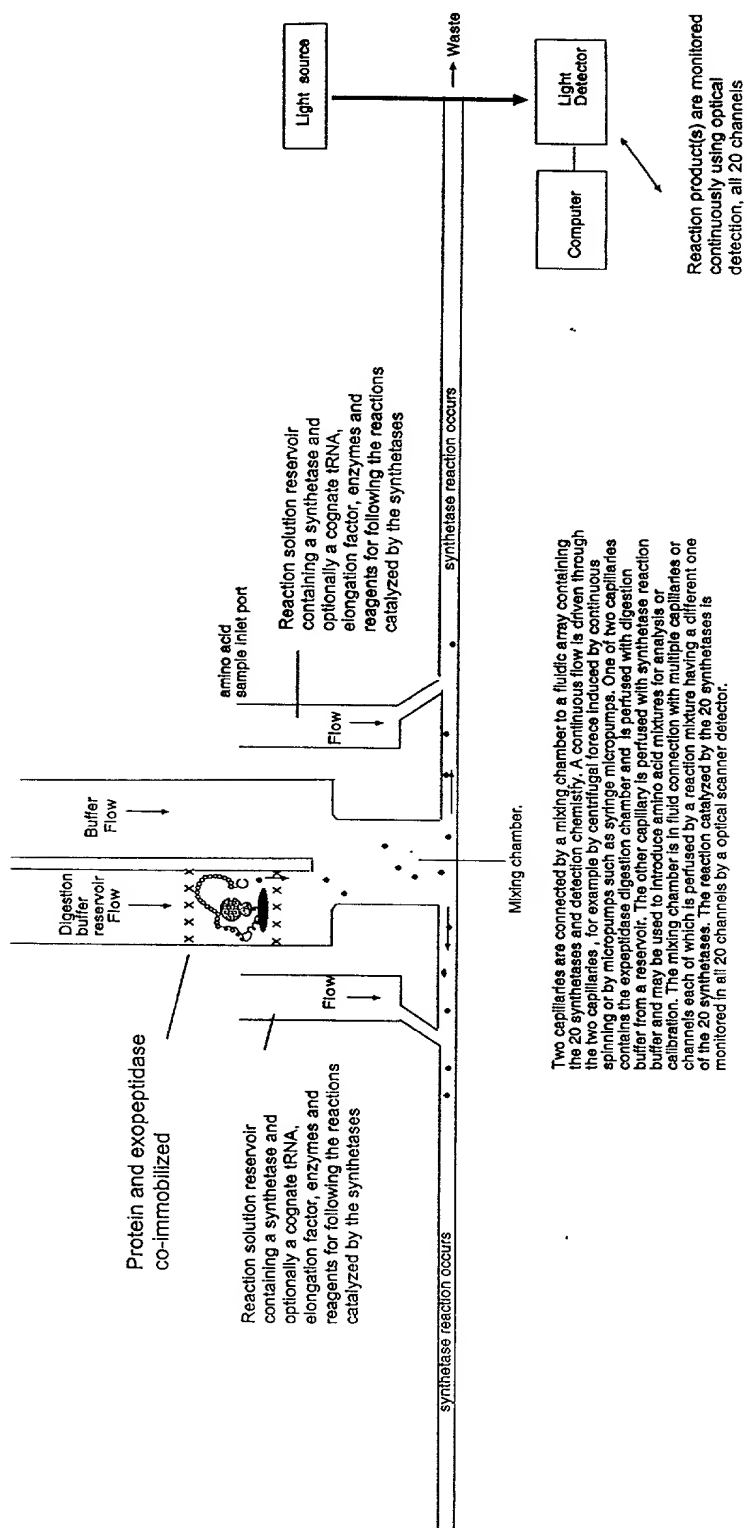


FIG. 19B





Two capillaries are connected by a mixing chamber to a fluidic array containing the 20 synthetases and detection chemistry. A continuous flow is driven through the two capillaries, for example by centrifugal force induced by continuous spinning or by micropumps such as syringe micropumps. One of two capillaries contains the exopeptidase digestion chamber and is perfused with digestion buffer from a reservoir. The other capillary is perfused with synthetase reaction buffer and may be used to introduce amino acid mixtures for analysis or calibration. The mixing chamber is in fluid connection with multiple capillaries or channels each of which is perfused by a reaction mixture having a different one of the 20 synthetases. The reaction catalyzed by the 20 synthetases is monitored in all 20 channels by an optical scanner detector.

Fig. 20

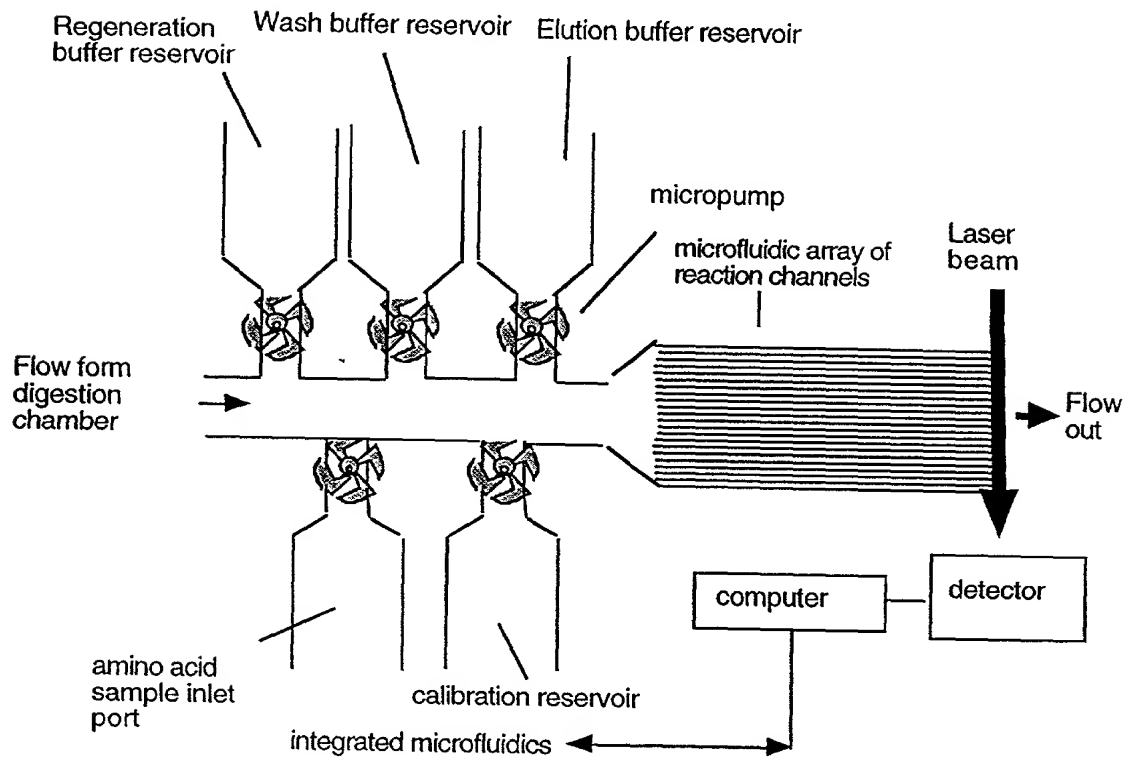


Fig. 21 A

integrated  
microfluidics

Fig. 21 B

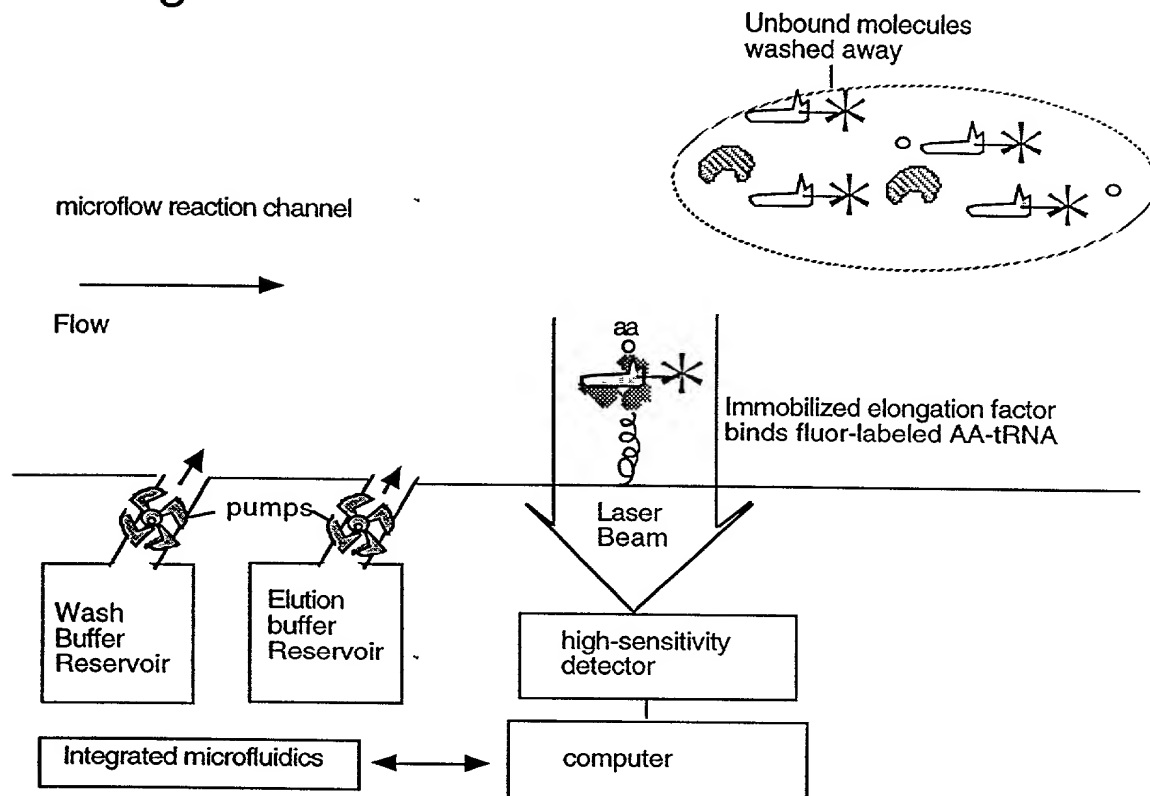
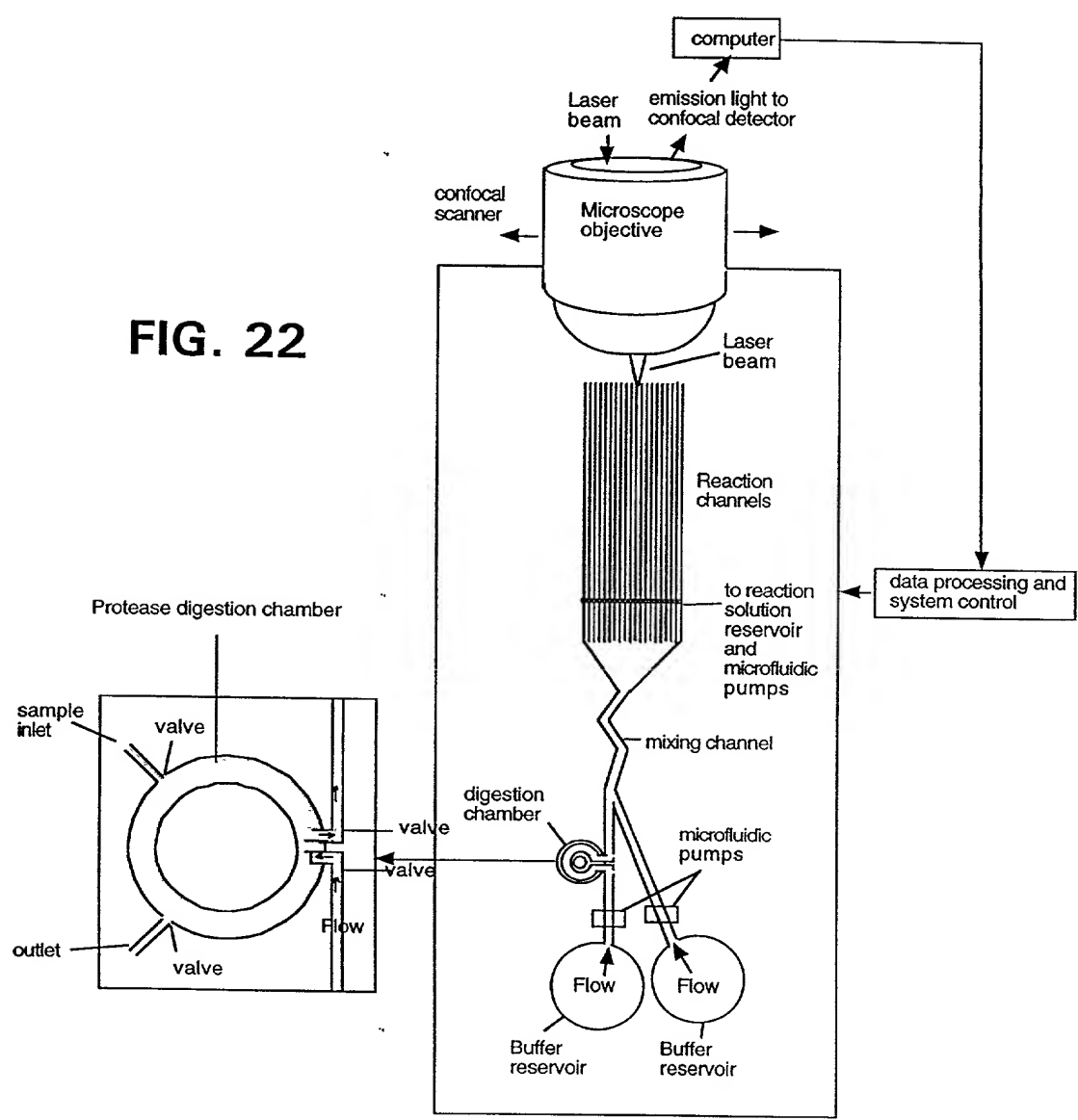


FIG. 22



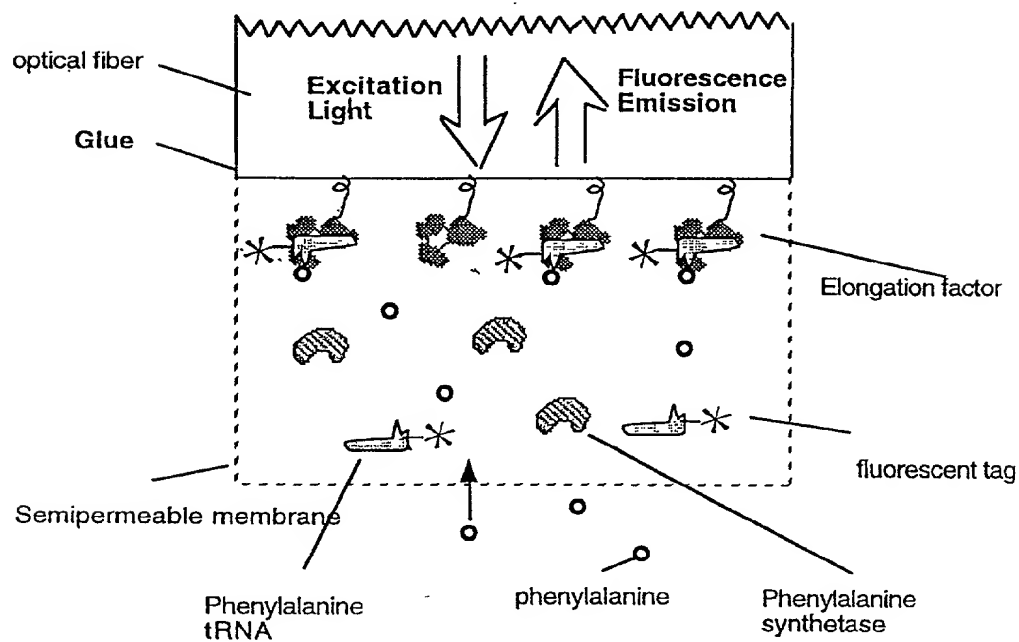
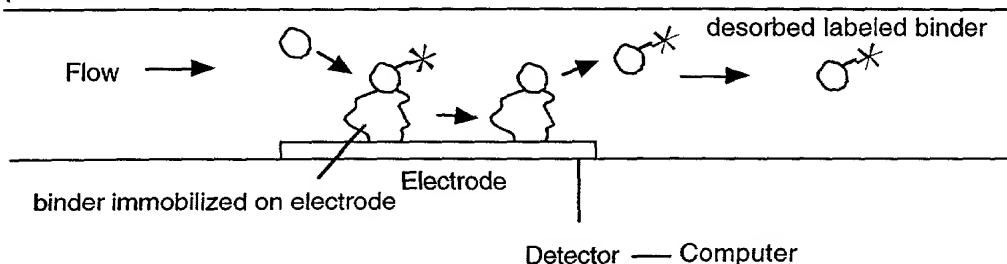


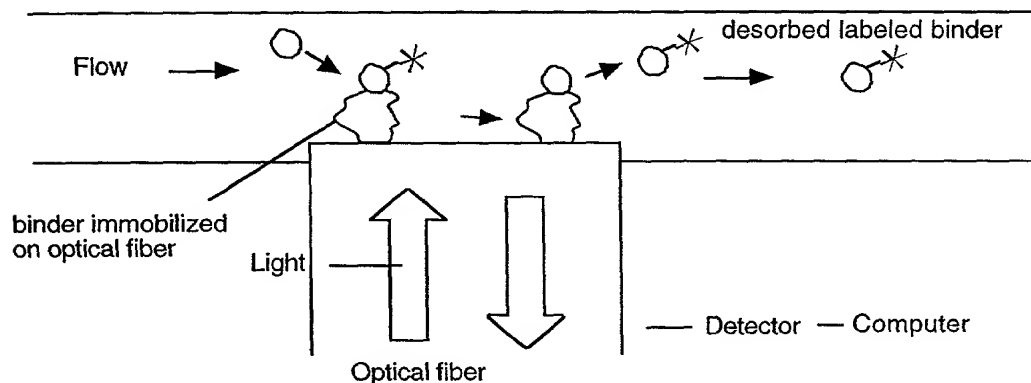
FIG. 23

## Biosensors

Using biosensor technology the biospecifically eluted substance may be detected by a change in signal at the transducers surface resulting from the displacement. The following examples illustrate this embodiment of the invention. Any of the biosensor technologies may be employed in these embodiments of the invention. Suitable biosensors include but are not limited to surface plasmon biosensors, optical fibers, electrochemical biosensors, and piezoelectric biosensors.



In this embodiment of the invention, the decrease in signal at the electrode surface is proportional to the eluted labeled molecule.



In this embodiment of the current invention, the decrease in signal at the surface of an optical fiber or optical waveguide bearing the substance having a reversibly bound labeled molecule is proportional to the eluted labeled molecule.

